No. 626,653. Patented June 6, 1899.

J. E. & O. A. FRENCH.

AUTOMATIC GRAIN BUNDLE SHOCKER.

(Application filed Aug. 25, 1896.)

(No Model.) 6 Sheets—Sheet 1.

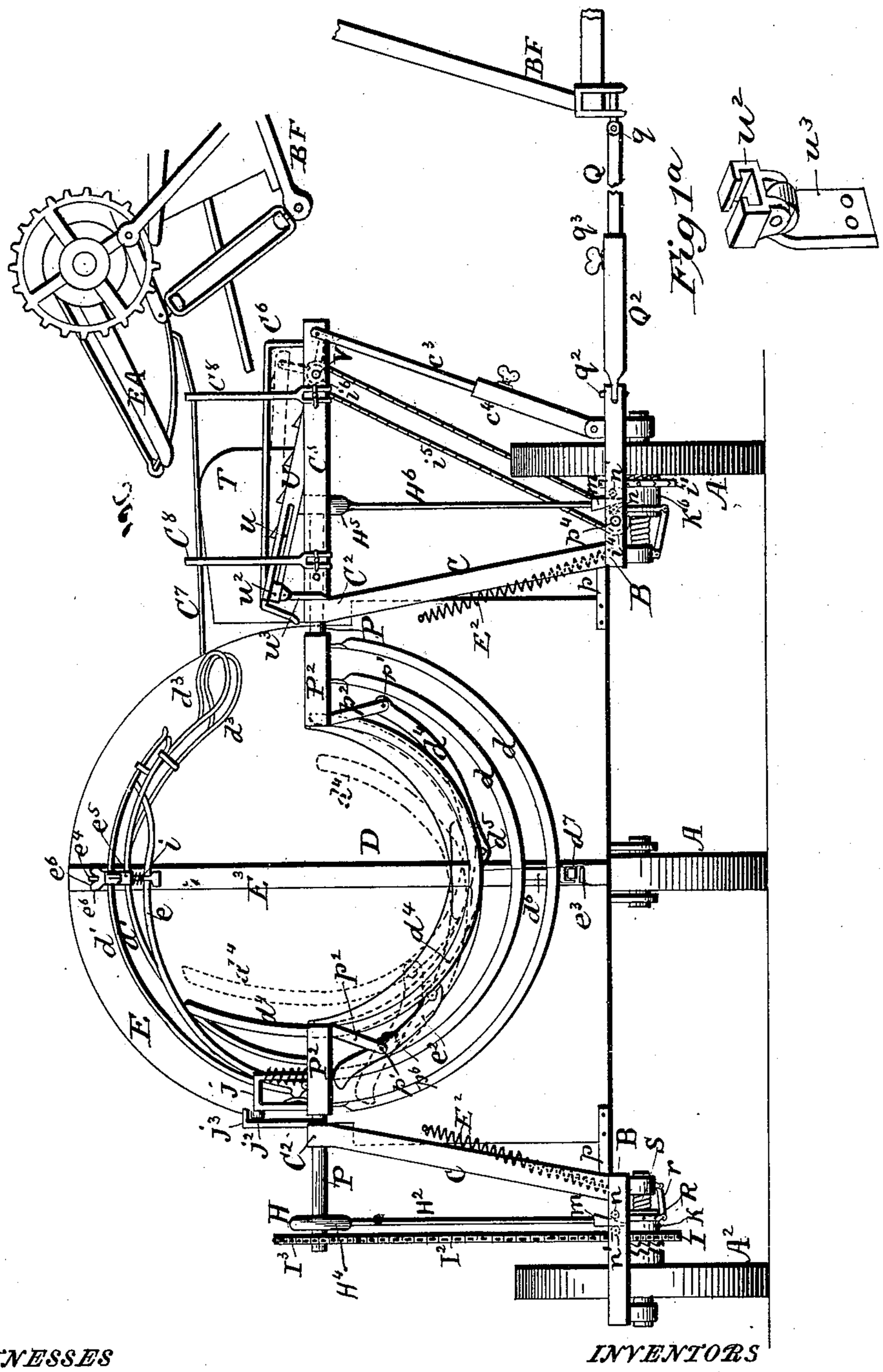

Fig. 1.

Fig 1a

WITNESSES

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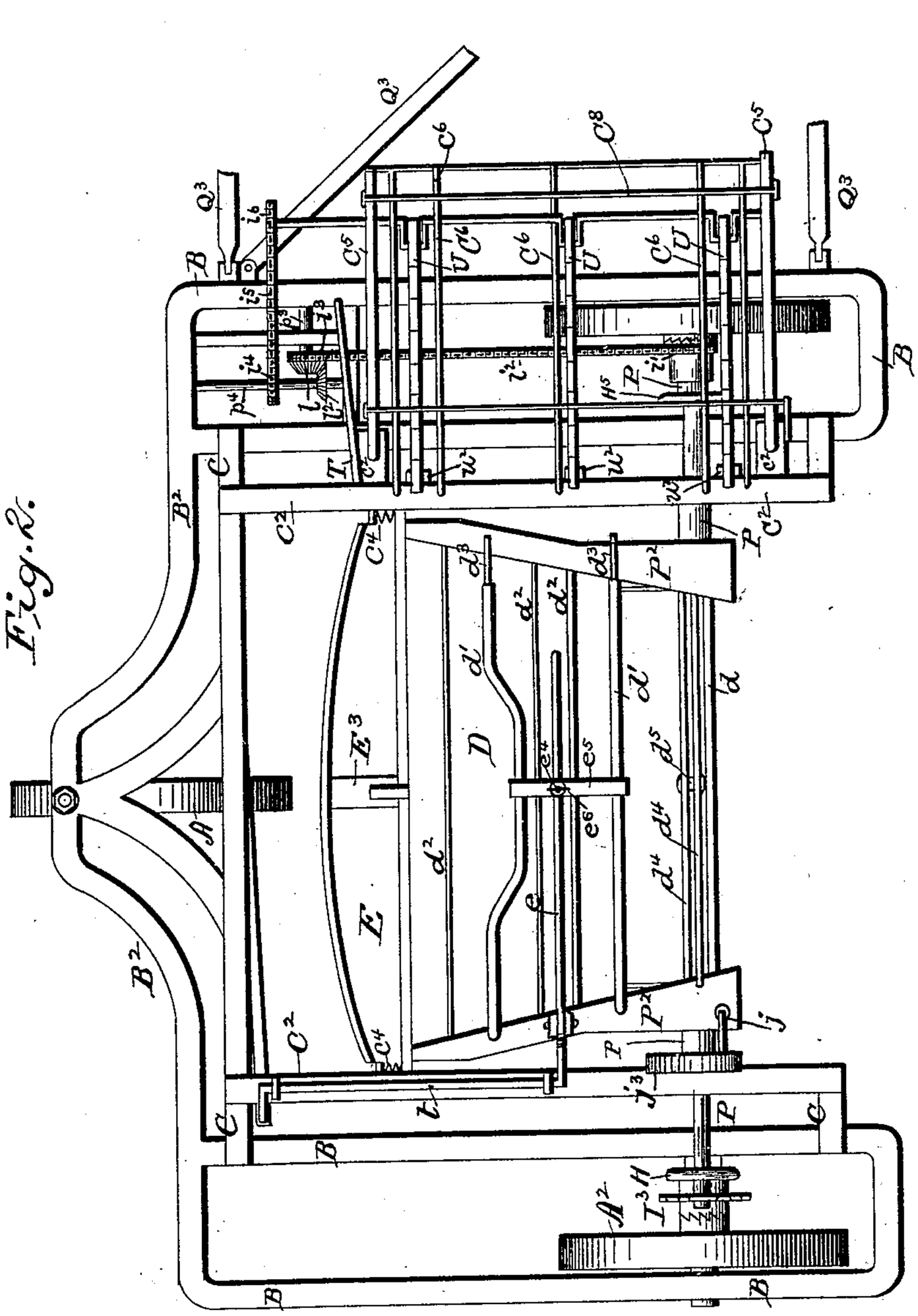
Fig. 2.



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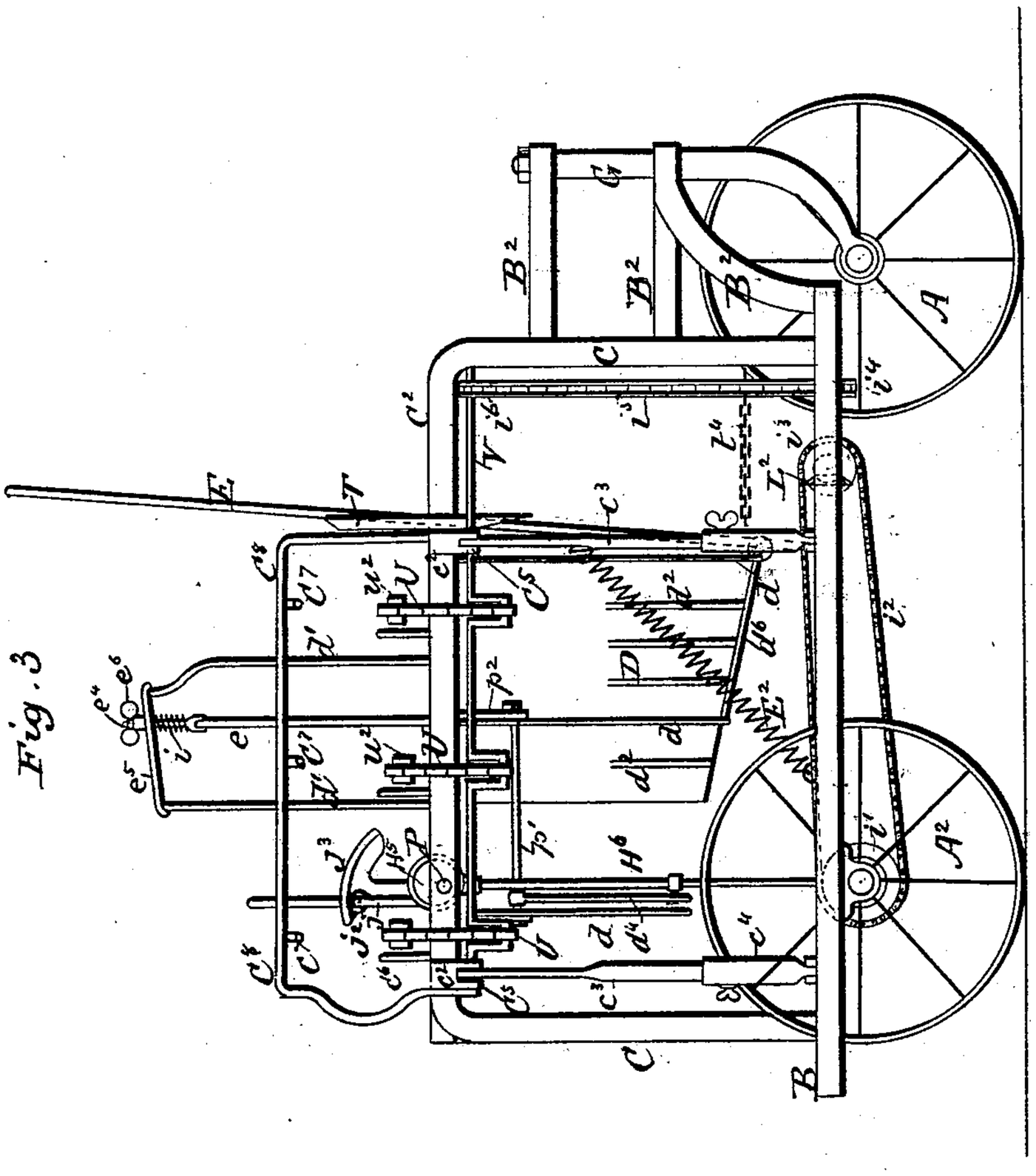

Fig. 3

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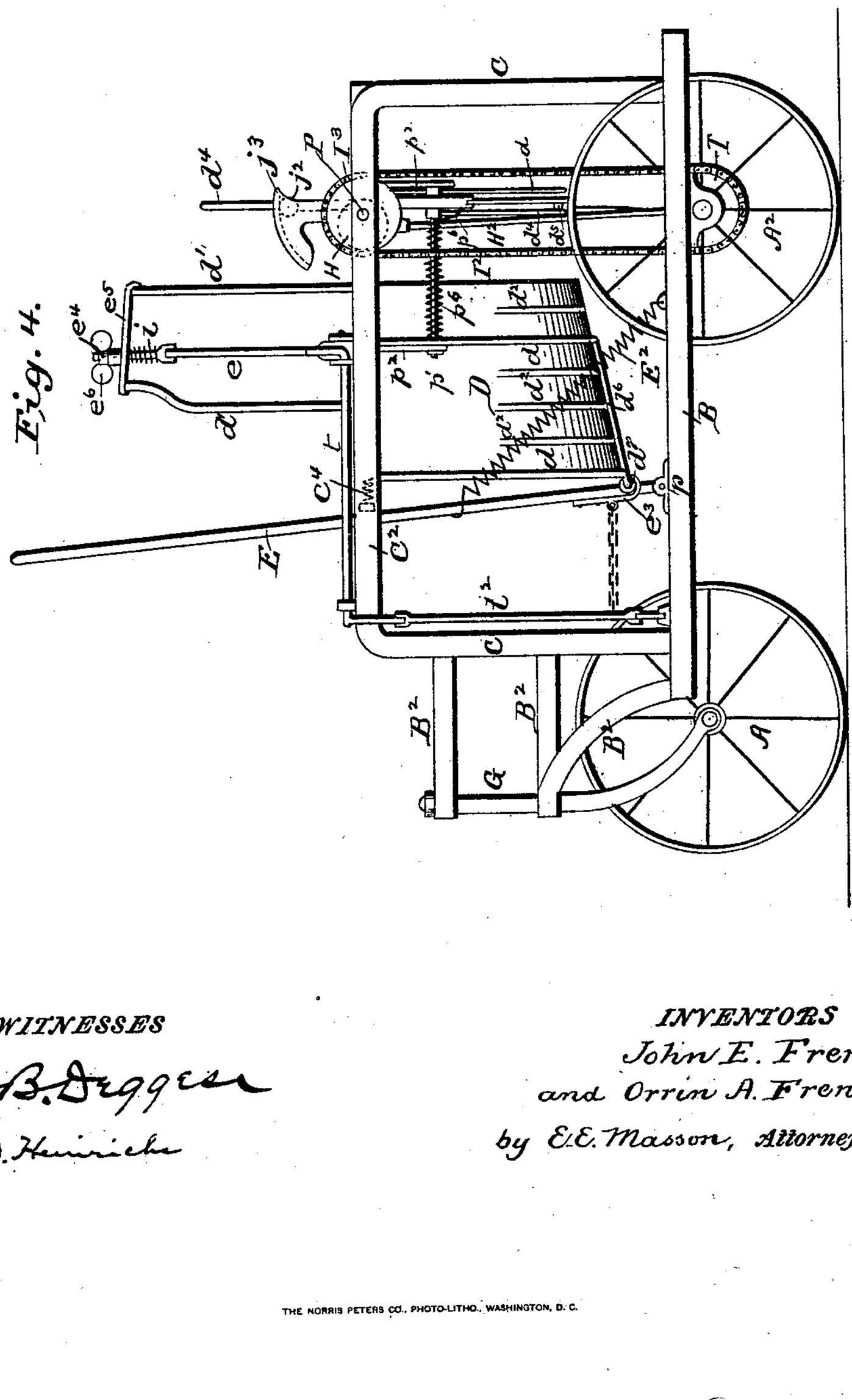
(No Model.) 6 Sheets—Sheet 4.

Fig. 4.



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(No Model.) 6 Sheets—Sheet 5.

Fig. 5

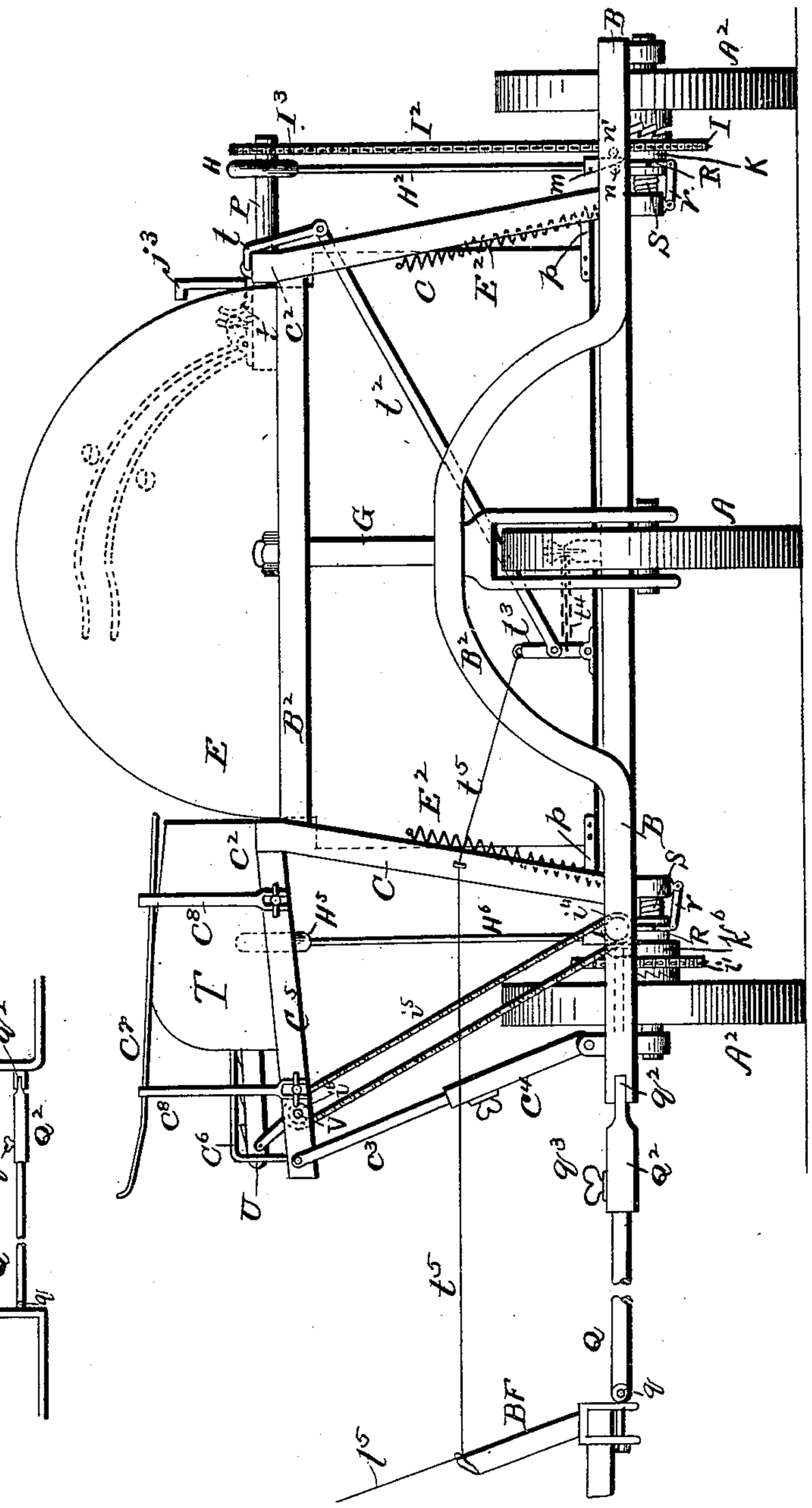

Fig. 6.

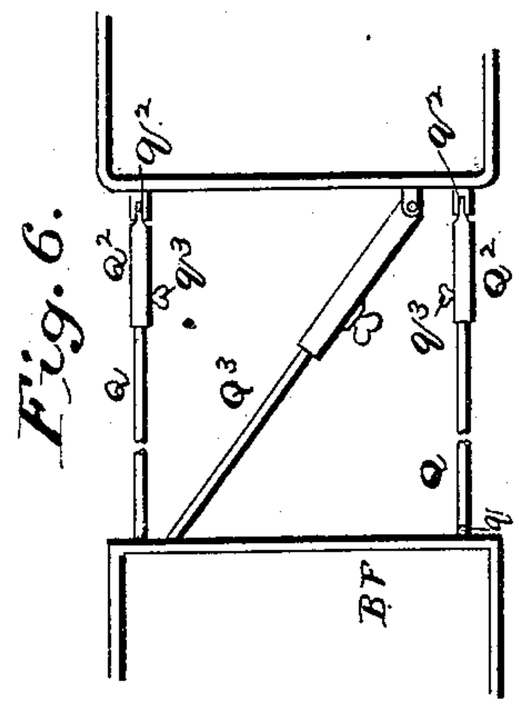

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Fig. 7.

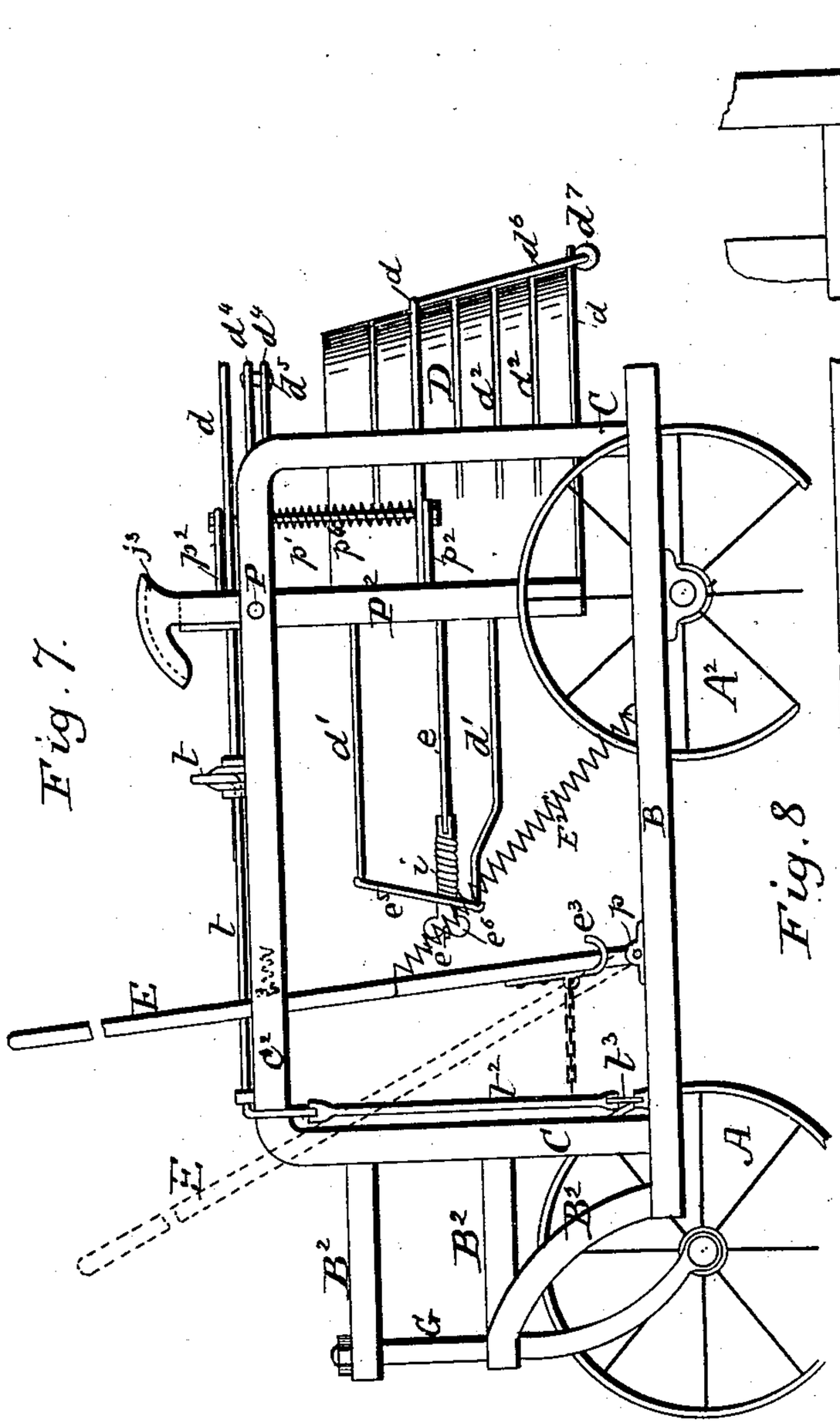


Fig. 8

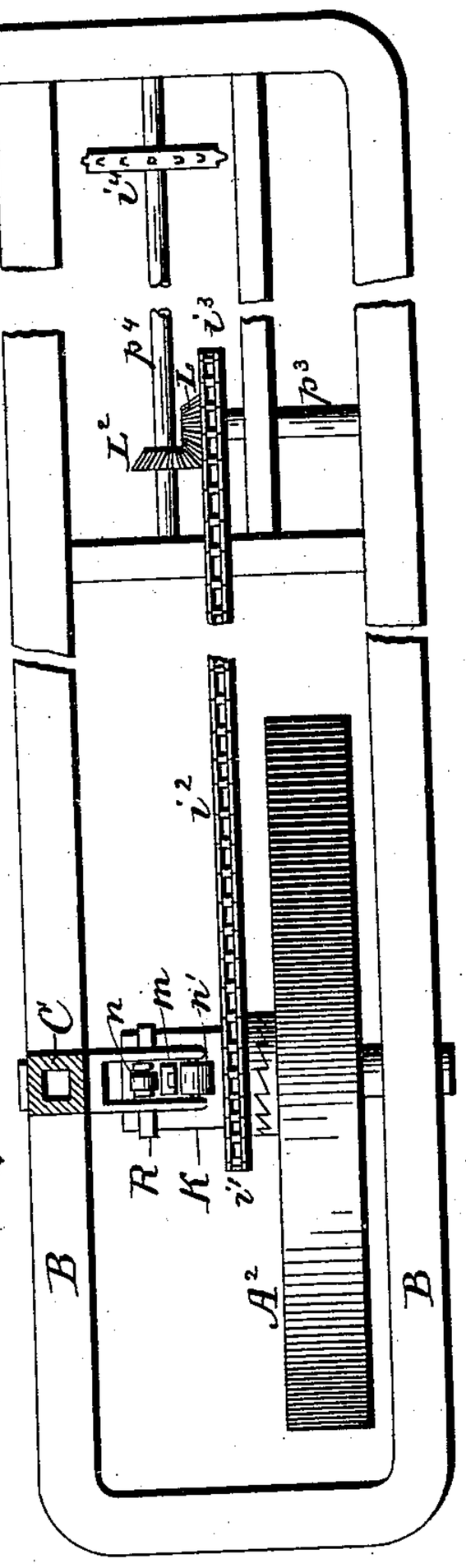
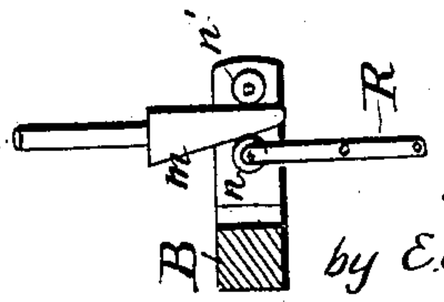


Fig. 9.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN E. FRENCH AND ORRIN A. FRENCH, OF ST. CLOUD, MINNESOTA.

AUTOMATIC GRAIN-BUNDLE SHOCKER.

SPECIFICATION forming part of Letters Patent No. 626,653, dated June 6, 1899.

Application filed August 25, 1896. Serial No. 603,836. (No model.)

To all whom it may concern:

Be it known that we, JOHN E. FRENCH and ORRIN A. FRENCH, citizens of the United States, residing at St. Cloud, in the county of Stearns, State of Minnesota, have invented certain new and useful Improvements in Automatic Grain-Bundle Shockers, of which the following is a specification, reference being had therein to the accompanying drawings.

The objects of our invention are to provide a machine of simple and comparatively inexpensive construction to take automatically the bound bundles of grain from a self-binding grain-harvester, pack them in the form of a shock into a horizontally-retained conical receiver connected to the side of said grain-binder, tilt the receiver, and deposit said shock upon the ground in a vertical position, after which automatically to turn the receiver over said shock and return it into a position to receive the bundles for another shock. We attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a rear elevation, with the sheet-metal grain-receptacle removed, of a machine constructed in accordance with our invention, one side of which is shown adjustably attached to the frame of a grain-binding harvester. Fig. 1ª is a perspective view of one of the guides for the reciprocating bars U. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation of the inner or right-hand side of the machine disconnected from the harvester. Fig. 4 is a side elevation of the outer or left-hand side of the machine. Fig. 5 is a front elevation of the machine. Fig. 6 is a plan view, on a small scale, of the adjustable rods connecting the shocker-frame to the grain-binder frame. Fig. 7 is a side elevation of the machine, showing the bundle-receptacle in a vertical position to discharge the bundles. Fig. 8 is a plan view, on a large scale, of a portion of the machine, showing parts of the gearing and one of the clutches and its operating-wedge. Fig. 9 is a rear view of one of the clutches and its operating-wedge.

Similar letters refer to similar parts throughout the several views.

In said drawings, B represents the two sides of the frame, that are connected together at the front end of the machine by braces B^2, thereby constituting a substantially U-shaped frame open at the rear. Said frame is carried by wheels A^2 on the sides and a caster-wheel A at the front, the spindle G of the forked caster-frame being received in perforations or bearings made in the front braces B^2 of the frame B. On top of each side frame B are secured two batter-posts C, having their upper ends united in pairs by bars C^2, that are united at the front by bars B^2, forming therewith also a U-shaped frame. In said bars C^2, toward the rear end thereof, are secured journal-boxes receiving trunnion-shafts P. The inner ends of each shaft P is provided with a crank-arm P^2, Fig. 2, to the under side of which are attached the ends of inverted arch-ribs *d*, Figs. 1, 3, and 4, forming arcs of different diameters to constitute the support for a truncated conical receptacle D, preferably of sheet metal corrugated with transverse ribs d^2. To the top of the outer crank-arm P^2 are also secured two arched rods d', the free ends of which extend to points nearly over the inner crank-arm P^2 and are provided with elastic looped ends d^3, their elasticity being to facilitate the entrance of the bundles and still maintain a support for said bundles while the receptacle is revolved. Hinged also to the top of the outer crank-arm P^2, between the arched rods d', there is a partly-arched pressure-arm *e*, on top of which is attached, directly over the axis of the grain-receptacle, a vertical screw-rod e^4, that passes through a cross-tie e^5, the ends of which are bent down and encircle the arched rods d'. The cross-tie e^5 is adjustably retained between the end of a spring *i*, coiled upon the screw-rod e^4, and a thumb-nut e^6 on the outer end of said screw-rod.

To temporarily clasp together the grain tops of the grain bundles within the receptacle D while the latter is turned over to cause them to be discharged with their butts spread apart, but substantially in a standing position upon the ground, the smallest pair of inverted arch-ribs d^4 operate as clamping-arms and have their outer ends pivoted on a shaft p' to the lower ends of lugs p^2 pendent from the crank-arms P^2 substantially directly under the axis of the trunnion-shafts P and are hinged together at d^5 in the lower portion of their arch. To cause said smallest pair of

ribs d^4 to be pressed upwardly toward the axis of the receptacle D at the proper time, there is pivoted to the left-hand lug p^2, Fig. 1, a lever e^2, the lower end of which carries a roller to bear upon the under side of the small rib d^4. The upper end of the lever e^2 is at the proper time pressed upon by one branch of a yoke j, that passes vertically through the crank-arm P^2. The yoke j constitutes a pressure device that is kept elevated by a coil-spring wound around one of its legs, while the other branch carries a friction-roller j^2, by which it is depressed when said roller passes within an eccentric concave guide j^3, projecting up from the outer top bar C^2 of the frame. To steady the receptacle D in its rotation and arrest said receptacle when it has reached a position suitable to receive the grain bundles, there is secured to the two longest inverted arch-ribs d in the lower portion thereof an arm d^6, carrying a roller d^7, that is received within the bend of a spring-hook e^3, Fig. 4, secured to the lower portion of a butting-board E. To render the hook e^3 springy, it is made of flat spring metal secured from its upper end only to said board E. The above-described parts are constituents of the conical receptacle D.

To start and arrest at the proper time the revolution of the receptacle D by operating upon the clutch mounted upon the shaft of the left-hand ground-wheel A^2, there is mounted upon the left-hand trunnion-shaft P an eccentric H, the strap and rod H^2 of which carries on its lower end a wedge m, adapted to be forced between a roller n', mounted in stationary bearings upon the frame B, and a roller n, carried on the upper ends of the jaws of a ring-lever R, Figs. 1, 5, 8, and 9, having pins entering an annular groove in the sliding member K of the clutch placed upon the axle of the ground-wheel A^2 on the left-hand side of the machine.

The lower end of the lever R is pivoted to one end of a metal strap r, that has its opposite end pivoted to the bottom of the inner bearing of the axle of the ground-wheel A^2. A coiled spring S is placed upon said shaft between said bearing and the member K of the clutch to normally force it in engagement with the second member of the clutch carried by the hub of the left-hand wheel A^2. The member K of the clutch carries also a sprocket-wheel I, that is connected, by means of a sprocket-chain I^2, with a sprocket-wheel I^3 on the outer end of the trunnion-shaft P and gives at the proper time one revolution to the said shaft.

To the two sides of the bottom frame B is pivoted the butting-board E, placed between them, said board having projecting from each of its two lower corners a spindle p, that is received in bearings upon said frame. Said board E is normally retained in a nearly-vertical position by means of a coiled spring E^2 on each side, set in an inclined position. The upper end of each spring is secured to the edge of the board E about one-third of its height and has its lower end secured to the frame B at a short distance from the axle-bearing of the rear ground-wheels.

To prevent the butting-board from returning too suddenly to a vertical position after the shock of grain bundles has been discharged, cushion-springs C^4, Fig. 4, are secured to the bars C^2 of the frame, along the inner side thereof, in the path of the butting-board. Vertically in the center of the inner face of the butting-board is secured thereto a recessed iron bar E^3, that constitutes a track for the roller d^7 on the lower edge of the receptacle D. The roller d^7 is arrested at the lower end of its course by the projecting part of the spring-hook e^3, as before stated. The butting-board is shown in Fig. 7 in full lines in its normal position and also tilted forward in dotted lines when the receptacle D is released to discharge its shock.

To secure the grain-shocker to a grain-binder frame B F (partly shown in Fig. 1) in a strong but adjustable and flexible manner to accommodate the parts to uneven ground, two rods parallel to each other and a rod placed diagonally between them are used. Each rod consists of a bar Q, having one end pivoted at q to the binder-frame in such manner that said bar can oscillate vertically, and a tubular sleeve Q^2 to receive in one end the opposite end of the bar Q. The opposite end of the sleeve Q^2 is hinged to the shocker-frame at q^2 in such a manner that its tubular end can oscillate horizontally, and a thumb-screw q^3 in engagement with the side of the sleeve Q^2 has its point bearing upon the bar Q. The flexible arrangement of the hinges at the ends of the rods may be reversed, if desired. The diagonal brace Q^3 is also made of two lengths adjustable relatively to each other and has its ends hinged to the binder-frame and shocker-frame, as described for the compound rods Q Q^2.

To advance the grain bundles from the grain-binder table into the bundle-receiver D, three or more conveyer-bars U, having ratchet-teeth on their top face, are used. They receive adjacent to their outer ends the cranks of a crank-shaft V, that is carried in suitable bearings in two parallel bars C^5, Fig. 2, that are hinged to forked lugs c^2, projecting from the side of the top bar C^2 of the frame. The outer ends of the bars C^5 are adjustably supported by rods c^3, having one end hinged thereto and the opposite end received in a sleeve c^4, having its lower end pivoted to a lug projecting up from the frame B. The stubbleward portion of each conveyer-bar U has a slot u in its side to receive the hooked fingers on the upper ends of the arms of guiding-staples u^2, that are pivoted to lugs u^3, Figs. 1, 2, and 3, secured to the bars C^2 of the frame, the fingers of the staples constituting guides for the front portion of the conveyer-bars.

To support the grain bundles above the

conveyer-bars U while the latter are reciprocated grainward before causing a new advance of said bundles, three or more rods C^6 have their rear end secured between the bars C^5 to a bar uniting said bars C^5 together under the binder-table, while their front end extends over the frame C close to the entrance to the receiver D. At a suitable height above the conveyer-bars U and the rods C^6 and substantially parallel to the latter are placed a series of rods C^7 to prevent the grain bundles from being crowded upward. The rods C^7 are carried by rods C^8, united in pairs, said rods C^8 having their lower ends forked and adjustably secured to the bars C^5.

To rotate the crank-shaft V, a sprocket-wheel is mounted on its front end, to which motion is given as follows, reference being had particularly to Fig. 8: The member K^6 of the clutch on the axle of the right-hand wheel A^2 carries a sprocket-wheel i', that is connected by means of a chain i^2 with a sprocket-wheel i^3, mounted on a counter-shaft p^3, located in advance of the wheel A^2. On the innermost end of the shaft p^3 is mounted a miter-gear L, that meshes with a miter-gear L^2, mounted upon a shaft p^4 at right angles to the shaft p^3. Upon the shaft p^4, toward its front end, is mounted a sprocket-wheel i^4, that is connected, by means of a chain i^5, with a sprocket-wheel i^6 upon the front end of the crank-shaft V, Fig. 1.

To guide the butts of the grain bundles toward the inner face of the butting-board E, a guide-board T is secured to the front face of the front bar C^5 to constitute a slightly-flaring entrance toward said butting-board E.

To automatically release the receptacle D from engagement with the spring-hook e^3, carried by the butting-board, and permit said receiver to be tilted in a vertical position to discharge the shock and thence to be turned over, the means employed are particularly shown in Figs. 4 and 5, in the latter of which the pressure-arm e is shown in dotted lines in two positions. It is hinged, as previously stated, on top of the outer crank-arm P^2. The outer end of the arm e, adjacent to its pivot, is provided with a convex eccentric heel that bears against the convex arm of a Z-shaped lever t, the middle portion of which is pivoted on top of the crank-arm P^2. The lower arm of the lever t is pivotally connected, by means of a diagonally-located connecting-rod t^2, with a short standard t^3, Fig. 5, that has its lower end pivoted upon the front portion of the frame B, and said standard is connected, by means of a chain t^4, with the hook e^3 on the butting-board E. To permit the driver to discharge the bundle-receiver at any time whatever may be the number of bundles therein, a cord t^5 has one end attached to the upper end of the hinged standard t^3, and the opposite end is within easy reach of said driver.

To start and stop the grain-bundle-feeding conveyers U, the outer end of the trunnion-shaft P on the right-hand side of the machine is provided with an eccentric H^5, having a strap and eccentric-rod H^6 and a wedge m on the lower end of said rod. Said wedge enters between the rollers n and n' to throw the movable member K^6 out of clutch, but is lifted by the eccentric H^5 when said member K^6 is to be again in clutch with the other member or the hub of the wheel A^2.

In operation, the bundle-packer having the adjustable rods c^3 c^4, the said rods permit it to be set to any elevation of the grain-binder. The ejector-arm E A of the binder crowds the grain bundles under the guide-rods C^7 onto the reciprocating toothed conveyers U, which advance them into the conical receptacle D. This action continues until sufficient bundles have accumulated therein to raise the pressure-arm e and force it against its top spring i until the convex eccentric heel on its lower end has acted through the lever t, connecting-rod t^2, hinged standard t^3, and chain t^4 to pull the hook e^3 from under the roller d^7 at the lower end of the receptacle D. Said conical receptacle D, being pivoted from its top edge through the medium of the crank-arms P^2 and trunnion-shafts P in the rear of its small end, is tilted by the weight of the inclosed shock to a vertical position, as shown in Fig. 7. The shock is thus dropped, standing with the butts of the bundles resting upon the ground.

In the operation of the machine after the receptacle D has been filled with grain bundles and while said receptacle is revolved and discharged five distinct movements occur in the mechanism. First, the pressure-yoke j is depressed while its roller j^2 passes under the concave guide j^3 and the roller on the side of the lower portion of its inner leg presses upon the upper end of the lever e^2. The roller on the lower end of said lever e^2 bears against the convex edge of the rib d^4 and the latter becomes contracted around the tops of the grain bundles, squeezing and holding them until they are dropped upon the ground with a wider spread at the bottom. As soon as the roller j^2 of the yoke j passes from under the concave guide j^3 the coiled spring on the leg of the yoke expands and causes said yoke to assume its original elevated position. Second, the butting-board E is tilted forward, as shown in Fig. 7, through the medium of the lever t, the connecting-rod t^2, hinged standard t^3, and chain t^4, releasing the receptacle D from engagement with its supporting-hook e^3. Third, the eccentric H on the left-hand trunnion-shaft P, its strap and rod H^2, draws the wedge m on its lower end sufficiently up to allow the member K of the clutch under the impulse of the spring S to engage with the second member of the clutch, that is secured to the side of the hub of the left-hand drive-wheel A^2. Said drive-wheel being in motion immediately causes the sprocket-wheel I, through the medium of the chain I^2, to revolve the sprocket-wheel I^3 and the latter the trunnion-shaft P, upon which it is mounted. Said

shaft P, being one of the trunnions of the receptacle D, revolves the latter and causes it to be turned over. During the last part of the revolution of the receptacle D its roller d^7 comes in contact with the iron track E^3 on the butting-board and follows it down to the arresting-hook e^3. When it has reached this point, the eccentric H and its rod H^2 force the wedge m on the lower end of said rod between the rollers n and n' and throw the member K of the clutch out of mesh with the member on the drive-wheel A^2 and stop that part of the mechanism, with the receptacle D in a horizontal position to receive grain bundles. Fourth, the eccentric H^5 on the end of the right-hand trunnion-shaft P, which is provided with a strap and eccentric-rod H^6 and a wedge m on the lower end of said rod. Said wedge enters between the rollers n n' and throws the inner member of the clutch K^6 out of mesh with the outer member, which is secured to the hub of the driving-wheel A^2. This action immediately stops the bundle-feeding conveyers U, and thereby allows the conical receptacle D to be discharged and turned over without interference. It also permits any bundle coming from the binder to lie on the rods C^6 of the conveyer. Fifth, at the moment that the receptacle D arrives at a horizontal position and the locking-hook e^3 receives the roller d^7 of said receptacle the eccentric H^5 on the right-hand trunnion-shaft draws up the wedge m and allows the clutch member K^6 to close by the action of the coil-spring S into engagement with the clutch member on the drive-wheel A^2, immediately starting the bundle-packer into action.

Before filling the receptacle the spring p^6, coiled upon the shaft p' of the clamping-ribs d^4, having one end bearing upon the lower half of the lever e^2, retracts the latter from contact with said clamping-rib d^4 and leaves unobstructed the entrance to the receptacle.

Having now fully described our invention, we claim—

1. In an automatic grain-bundle shocker, the combination of the frame of a grain-binder, a bundle-shocker frame hinged to, and adjustably secured to the side of the grain-binder frame, wheels carrying the shocker-frame, a U-shaped frame in a horizontal plane above the top of the carrying-wheels and a semiconical receptacle adapted to be turned over around horizontal trunnions pivoted to the side of the U-shaped shocker-frame substantially as described.

2. In an automatically-operated grain-bundle shocker, the combination of the frame of a grain-binder, a U-shaped bundle-shocker frame hinged thereto, wheels carrying said shocker-frame, posts upon said frame, and a secondary U-shaped frame upon said posts, with a semiconical receptacle pivoted to the inner sides of the secondary frame and adapted to be turned over substantially as described.

3. In an automatic grain-bundle shocker, the combination of the frame of a grain-binder, a U-shaped bundle-shocker frame hinged thereto, wheels carrying said frame, posts upon said frame, and a secondary U-shaped frame upon said posts with a semiconical receptacle pivoted to the inner sides of the secondary frame, and arched rods over said receptacle and means to turn over said receptacle substantially as described.

4. In an automatic grain-bundle shocker, the combination of the frame of a grain-binder, a U-shaped bundle-shocker frame hinged thereto, wheels carrying said frame, posts upon said frame, and a secondary U-shaped frame upon said posts, trunnion-shafts passing through the secondary frame, crank-arms secured to the inner ends of said shafts, inverted arch-rods secured to the crank-arms, a roller-carrying arm d^6 secured to said arch-rods and a semiconical receptacle upon said arch-rods substantially as described.

5. The combination of a U-shaped bundle-shocker frame having its sides united together at the front end, wheels carrying said frame, posts upon said frame, and a secondary U-shaped frame, upon said posts, trunnion-shafts passing through the secondary frame crank-arms secured to the inner ends of said shafts, a semiconical receptacle carried by said crank-arms, lugs p^2 pendent from the crank-arms and a pair of ribs d^4 having one end hinged to the lugs p^2 and devices for causing the free ends of the ribs to approach each other by the tilting of said receptacle and arched rods d' and e substantially as described.

6. The combination of a U-shaped bundle-shocker frame having its sides united together at the front end, wheels carrying said frame, posts upon said frame, and a secondary U-shaped frame upon said posts, trunnion-shafts on the secondary frame, crank-arms secured to the inner ends of each shaft, a semiconical receptacle carried by said crank-arms, lugs p^2 pendent from the crank-arms, arched rods d' and e a pair of curved ribs d^4 pivoted together between their ends and each having one end hinged to the lugs p^2 and a lever e^2 adapted to press against the convex side of one of the ribs d^4 and devices for operating the lever by the tilting of the said receptacle substantially as described.

7. The combination of a U-shaped bundle-shocker frame, trunnion-shafts thereon, crank-arms secured to the inner ends of said shafts, a semiconical receptacle carried by said crank-arms, lugs p^2 pendent from the crank-arms, a pair of curved ribs d^4 pivoted together between their ends and each having one end hinged to the lugs p^2 a lever e^2 adapted to press against the convex side of one of the ribs d^4, a yoke j having one of its branches bearing upon the lever e^2, and a stationary concave guide j^3 in the path of said yoke substantially as described.

8. The combination of a U-shaped bundle-

shocker frame, trunnion-shafts mounted thereon, crank-arms secured to the inner ends of said shafts, a conical receptacle carried by said crank-arms, two arched rods d' having one end secured to one of the crank-arms and the opposite end provided with elastic loops substantially as described.

9. The combination of a U-shaped bundle-shocker frame, a butting-board hinged thereto to trunnion-shafts mounted upon said frame, crank-arms secured to the inner ends of said shafts, a conical receptacle carried by said crank-arms, two arched rods d' having one end secured to one of the crank-arms, a pressure-arm e, hinged to said crank-arms between the rods d' and having its free end yieldingly supported by said rods d' and the Z-shaped lever t and its connections with the butting-board substantially as described.

10. The combination of a U-shaped bundle-shocker frame, trunnion-shafts mounted thereon, crank-arms secured to the inner ends of said shafts, a conical receptacle carried by said crank-arms and having a roller d^7 projecting from its lowest end, a butting-board E hinged to the shocker-frame and a hook e^3 secured to the butting-board to receive the roller d^7 substantially as described.

11. In an automatic grain-bundle shocker, the combination of the frame of a grain-binder, a U-shaped bundle-shocker frame hinged to the grain-binder, trunnion-shafts mounted upon the shocker-frame, crank-arms secured to the inner ends of said shafts, a conical receptacle carried by said crank-arms and adapted to be turned over said shafts to discharge it, and be returned into position to be loaded, arched rods d' secured to one of the crank-arms over the receptacle, and means to automatically release the conical receptacle substantially as described.

12. The combination of a U-shaped bundle-shocker frame, trunnion-shafts mounted thereon, crank-arms secured to the inner ends of each shaft a conical receptacle carried by said crank-arms and having a roller d^7, a butting-board E a hook e^3, projecting from the rear of the butting-board, a pivoted pressure-arm e having a laterally-projecting heel, a double crank-lever t, having one end bearing against said heel and means substantially as described to connect said crank-lever with the hook e^3 to release the conical receptacle.

13. The combination of a U-shaped bundle-shocker frame, trunnion-shafts mounted thereon, crank-arms secured to the inner ends of said shafts, a conical receptacle carried by said crank-arms and having a roller d^7 projecting from its lower end, a butting-board E hinged to the shocker-frame the hook e^3 on said butting-board and springs E^2 having one end secured to the sides of the butting-board and the other end to the shocker-frame substantially as described.

14. The combination of a U-shaped bundle-shocker frame, supporting-wheels on the sides thereof, trunnion-shafts mounted on said frame, crank-arms secured to the inner ends of said shafts, a conical receptacle carried by said crank-arms, a sprocket-wheel mounted upon the stubbleward trunnion-shaft, the supporting-wheel A^2, its sprocket-wheel and chain, two members of a clutch upon the axle of said supporting-wheel, one of said members being actuated by a spring, a wedge m in engagement with said member, an eccentric H upon said stubbleward trunnion-shaft substantially as described.

15. The combination of a U-shaped bundle-shocker frame, supporting-wheels on the sides thereof, trunnion-shafts mounted on said frame, crank-arms secured to the inner ends of said shafts, and a conical receptacle carried by said crank-arms, a sprocket-wheel I^3 on one of the trunnion-shafts, the two members of a clutch on the axle of one of the supporting-wheels, the wedge m adapted to operate on the movable member of the clutch, and an eccentric to operate said wedge from the trunnion-shaft of the receptacle in connection with a chain and sprocket-wheels I, I^3 substantially as described.

16. The combination of a U-shaped bundle-shocker frame, supporting-wheels on the sides thereof, trunnion-shafts mounted on said frame, crank-arms secured to the inner ends of said shafts, and a conical receptacle carried by said crank-arms, with the eccentric H on one of the trunnion-shafts, the eccentric-rod and a wedge m on the lower end of said rod, said wedge being between a roller mounted on the shocker-frame and a roller mounted upon a member of a clutch upon the axle of one of the supporting-wheels, and a gear connection between the clutch and the trunnion of the receptacle substantially as described.

17. The combination of a U-shaped bundle-shocker frame, supporting-wheels on the sides thereof, trunnion-shafts mounted on said frame, crank-arms secured to the inner ends of said shafts, a conical receptacle carried by said crank-arms, the eccentric H^5 upon the grainward trunnion-shaft, the eccentric-rod H^6 and a wedge on the lower end of said rod, the grainward supporting-wheel, two members of a clutch on the axle of said wheel, one of said members being actuated by a spring in one direction and by the wedge in the opposite direction, the sliding member carrying a sprocket-wheel, the bundle-conveyer and chain to operate a bundle-conveyer substantially as described.

18. The combination of a U-shaped bundle-shocker frame, supporting-wheels on the sides thereof, trunnion-shafts mounted on said frame, crank-arms secured to the inner ends of said shafts, a conical receptacle carried by the crank-arms, two members of a clutch on the axle of the grainward supporting-wheel, a sprocket-wheel upon one of said

members, another sprocket-wheel in advance thereof, miter-gears L and L^2, sprocket-wheels i^4, i^6 and their connecting-chain, with the bundle-feeding mechanism consisting of the toothed conveyer-bars U having slots in their two sides and double-hooked retainers u^2 in engagement with said slots, and a crank-shaft journaled in the frame and its cranks journaled in the rear end of said conveyer-bars substantially as described.

19. The combination of a bundle-shocker frame, supporting-wheels on the sides thereof, trunnion-shafts mounted on said frame, crank-arms secured to the inner ends of said shafts and a conical receptacle carried by the crank-arms with a bundle-feeding mechanism consisting of the parallel bars C^5 having their inner ends pivoted to the shocker-frame, the adjustable rods c^3, c^4, supporting the outer ends of the bars C^5 the feed-bars U, the crank-shaft V, the sprocket-wheel i^6 thereon, the chain i^5, sprocket-wheel i^4, its shaft, the bevel-gears L and L^2, the chain i^2, and sprocket-wheel on the axle of the supporting-wheels, substantially as described.

20. The combination of a bundle-shocker frame, supporting-wheels, trunnion-shafts mounted on said frame, crank-arms secured to the inner ends of said shafts, and a conical receptacle carried by the crank-arms with a bundle-feeding mechanism consisting of the parallel bars C^5, having their inner ends pivoted to the shocker-frame, the shaft V, having cranks thereon, the conveyer-bars U, the rods C^6, between said conveyer-bars, the rods C^7, above them, the adjustable rods C^8, carrying the rods C^7, and the guide-board T, in front of said rods, substantially as described.

In testimony whereof we hereunto affix our signatures in presence of two witnesses.

JOHN E. FRENCH.
ORRIN A. FRENCH.

Witnesses:
ANDREW C. ROBERTSON,
FRANCIS MCGUIRE.